The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. This action is supplemental to the action of 18 March 2008, and takes into account the Article 34 Amendments of 09 May 2006.

Claims 1 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Komatsu *et al.* (JP 62-165,874), cited by applicant.

Komatsu *et al.* disclose a fuel cell stack comprising a plurality of multicell modules (6) stacked in series (figures 2 and 3). At the ends of each module are plates (2) that form outward extensions of the end fuel cells. The two plates are connected to each other via threaded bolts (3), which would form restraining members, which extend through holes in the outwardly extending part of each frame. The frames and bolts would also cooperate to restrain the modules in the direction perpendicular to the stacking direction. The bolts would each constitute a restraining shaft as well as a stack tightening shaft, due to their threads cooperating with nuts (5). In figure 2, the bolts of respective modules are connected to each other, to form a restraining member that extends in a stacking direction over all of the fuel cell modules.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (JP 61-39,373).

Yamamoto discloses a fuel cell stack comprising a plurality of multicell modules (30) stacked in series (figure 1). At the ends of each module are plates (2, 3), which are connected to each other at their outer edges via bolts (8) and manifolds (4 through 7), which would form restraining members. These restraining members would restrain the modules in both the stacking

and perpendicular directions, due to the bolts being disposed inwardly into the plates. The stack also includes studs (70) that extend throughout the entire stack, thus forming a restraining member that extends in a stacking direction over all of the modules.

Claims 1, 3, 5-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards (US 5,547,777) in view of Yamamoto.

Richards discloses a fuel cell stack that includes a plurality of multicell modules (figure 8) stacked in series (figure 11), each of the modules including a plurality of cells (10) layered in the stacking direction, and including opposite end cells within each module. Anchoring bolts (23b), inserts (23a) and housing portions (20) cooperate to form restraining members that connect to plates (22) at opposite ends of each module, and thus restrain of the modules at the opposite end fuel cells thereof. The close cooperation of the bolts, inserts and housing portions would also restrain the modules in a direction perpendicular to the stacking direction. Each end plate is also connected to an end plate of an adjacent module via mounting hardware (34) in the form of threaded nuts and bolts. These would form connecting members, and like restraining members, are disposed within holes of the end plates that extend outwardly of the cells therebetween. Thus, the opposite end cells each include an extended portion, where the modules are restrained by the restraining member. The bolts (23a) would constitute shafts that would both restrain and tighten the module of fuel cells, and thus the stack thereof. The anchoring bolts and threaded bolts are similar, but still different in size and specific shape. Thus, the connecting member is different from the restraining member. These claims differ from Richards by reciting that the restraining member extends over all of the plurality of fuel cells in the stack. Yamamoto

discloses a fuel cell stack made up of multicell modules (30) stacked in series (figure 1), which are restrained by studs (70) that extend throughout the entire stack. Because of the ability of these studs to align the modules along a consistent horizontal location, it would be obvious to use the studs of Yamamoto in the restraining members of Richards.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Yamamoto or Komatsu *et al.*, each in view of Gionfriddo (US 4,689,280).

This claim differs from Komatsu *et al.* by reciting a dummy cell at the end of each fuel cell module. Gionfriddo discloses a plate structure (50) used for the end plates of a fuel cell stack (column 3, lines 7-11), which includes a dummy cell (column 3, lines 62-68). Because this helps the fuel cell to accommodate shrinkage (column 3, lines 7-11) and provides resiliency (column 3, lines 65-68), it would be obvious to use dummy cells as shown by Gionfriddo as the end cells of the fuel cell modules of Yamamoto or Komatsu *et al.*

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richards in view of Yamamoto as applied to claim 1 above, and further in view of Gionfriddo.

This claim differs from the above combination by reciting a dummy cell at the end of each fuel cell module. Gionfriddo discloses a plate structure (50) used for the end plates of a fuel cell stack (column 3, lines 7-11), which includes a dummy cell (column 3, lines 62-68). Because this helps the fuel cell to accommodate shrinkage (column 3, lines 7-11) and provides resiliency (column 3, lines 65-68), it would be obvious to use dummy cells as shown by Gionfriddo as the end cells of the fuel cell modules of Richards, modified in view of Yamamoto.

Claims 9, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards in view of Yamamoto as applied to claims 1 and 8 above, and further in view of Barton *et al.* (US 5,686,200), cited by applicant.

These claims differ from the above combination by reciting that the restraining member is a clip or an ear portion formed in the extended portion of the end cell, or by reciting deformation preventing members disposed between the extended portions of the opposite end cells, which may be plastic or elastic. Barton *et al.* disclose fuel cell stack with ends plates (42, 52) disposed around a set of cells, and extending beyond the edges thereof, which are held together with clips (64) or ear portions (152a, 152b, 242a, 252b), and which may also include deformation preventing members (242b, 252a) extending between outwardly extending parts of the end plates. These members are "compliant" (column 11, lines 26-30), and would thus be resilient. Because these compliant members provide nearly constant compressive forces as the MEA changes thickness over time (column 3, lines 20-24), it would be obvious to use the clip, ear portion and deformation preventing members of Barton *et al.* in the multi-module fuel cell stack of Richards, modified in view of Yamamoto.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards in view of Yamamoto as applied to claim 6 above, and further in view of Sugita *et al.* (US 6,613,470), cited by applicant.

These claims differ from the above combination by reciting that the extended portion of the end fuel cell and the restraining shaft are insulated from each other by an electric insulator, which may be a bushing fixed to the hole in the extended portion or a cylinder supported by the

shaft. The bushing may also have a flange. Sugita *et al*. disclose fuel cell fasteners that include a cylindrical insulator (98) that surrounds a shaft (86), and also serves as a bushing within a hole (96) in an end plate (16). The cylindrical insulator adjoins a plate-shaped insulator (84), which would form a flange. Because of the safety afforded by the electrical insulators, it would be obvious to use the cylindrical and plate-shaped insulators of Sugita *et al*. with the end plate and threaded bolt of Richards, modified in view of Yamamoto. The head of the bolt would mate with a plate-shaped insulator, thus further showing the usefulness of a flange.

The disclosure is objected to because of the following informalities: In figure 15, there are two different parts numbered 33. Should one of these be instead numbered 32? Appropriate correction is required.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen J. Kalafut/
Primary Examiner, Art Unit 1795